

## CHAPTER 3

### INDUSTRIAL SECTOR

This sector consists of Mining and Quarrying, Manufacturing (Large Scale, Small Scale & Slaughtering), Construction and Electricity, Gas & Water Supply sub-sectors, details of which are given below.

#### Mining and Quarrying

Presently, the value addition in the mineral sector is concentrated in three principal minerals, i.e., coal, natural gas and crude oil. These three minerals account for about 82% in the total value addition in the mineral sector.

To estimate the revised benchmark 1999-2000 estimates of value addition, the mining and quarrying sector has been re-classified according to ISIC Revision III and PSIC Revision II. The composing elements of the sector are as under:

- ◆ Coal Mining
- ◆ Crude Oil Mining
- ◆ Natural Gas Mining
- ◆ Other Minerals
- ◆ Surface Minerals
- ◆ Allied Services
- ◆ Minerals Exploration Establishments

Product approach is used for estimating the value added in coal, crude oil & natural gas, other minerals and surface minerals while income/cost approach was used to estimate the benchmark value addition in Allied Services/Mineral Exploration Establishments.

**Intermediate Cost:** In the 1980-81 base year series, 20 % fixed input cost was deducted from the total gross output to arrive at gross value added. Now for the base 1999-2000, the separate input cost ratios by mineral items have been calculated which are as follows:

Minerals	Intermediate Input as % of Output
Coal	23.92
Crude Oil & Natural Gas	23.18
Other Minerals	20.80
Surface Minerals	21.02
Allied Services/Mineral Exploration Companies	46.50

Input cost for Coal, Crude Oil & Natural Gas, Other Minerals and Surface Minerals exist in the same vicinity. The higher input cost for allied services appears logical as it includes a considerable element of consequential cost of

mineral exploration especially for crude oil and natural gas.

**Gross Value Added:** The gross value added is the balancing item in the production account of SNA-93. For the revised base estimates gross output is calculated at producer prices for each mineral category and, intermediate cost at purchaser prices. The 1980-81 based GVA estimates are grossly under estimated in crude oil & natural gas and other minerals while the surface mineral and allied services/exploration establishments are entirely missing. Unaccounted minerals have also been accounted for. Detailed estimates of the sector for the revised base 1999-2000 are annexed as annexures 28 and 29. Summary performance is tabulated below.

#### GVA Estimates, 1999-2000 (Rs. Million)

Sub-sector	1999-2000 Base	1980-81 Base
Coal Mining	2348	4301
Crude Oil & Natural Gas	37412	7348
Surface Minerals	1174	-
Allied services	1954	-
Other Minerals	5488	5744
<b>Total</b>	<b>48377</b>	<b>17393</b>

In the new benchmark current prices of each mineral for the year 1999-00 are used. The new benchmark GVA (Rs 48.4 billion) is quite higher than the same one (Rs 17.4 billion) estimated with base 1980-81. This is attributed to enhanced coverage and revised estimation methodology in line with SNA-93.

#### Manufacturing

The Manufacturing Sector is divided in to three following sub sectors.

- ◆ Large Scale Manufacturing
- ◆ Small Scale Manufacturing
- ◆ Slaughtering

Large Scale Manufacturing covers the establishments registered under Section 2(j) and 5(i) of the Factories Act, 1934, whereas Small Scale Manufacturing includes all such manufacturing establishments not covered thereunder. Section 2(j) refers to the factories which employ 20 or more workers on any working day during the year and use power in their manufacturing operation. Section 5(i) pertains to factories wherein a manufacturing process is carried on or ordinarily carried on whether with or without the use of power wherein ten or more workers are working there in or have worked there on any day of

the 12 months immediately preceding. The data on large scale manufacturing establishments is collected through census of manufacturing industries by the joint efforts of Federal Bureau of Statistics, Provincial Directorate of Industries & Provincial Bureaux of Statistics. The summary performance of the sub-sector is given below.

**GDP Estimates, 1999-2000 (Rs. Million)**

Sub-sector	1999-2000 Base	1980-81 Base
Large Scale	338602	319616
Small Scale	132369	127779
Slaughtering	51830	-
Total	<b>522801</b>	447395

### Large Scale Manufacturing

There are two sources of data on large-scale manufacturing. One is the annual census of manufacturing (CMI) and the other is data on current output of industrial commodities. Census data is used to derive benchmark estimates. According to SNA 1993, Liquid Petroleum Gas (LPG) is also included in this sub-sector.

**1980-81 Base Methodology:** Basically Census of Manufacturing Industries (CMI) provides census value added at producer's price which is further adjusted for net indirect taxes and other over-head cost to arrive at GNP value added at factor cost. The 1980-81 benchmark estimates of Large Scale Manufacturing were prepared on the data supplied by 1980-81 (CMI) after adjustment for non-response, under-reporting and under-coverage. However, the CMI is not currently being used for estimation of annual estimates of value added in respect of large scale manufacturing establishments.

The methodology applied in the 1980-81 base estimates of national accounts implicitly assumes that the cost structure has not changed over a period of time, which is not true. Changes in value added from one year to the next may differ from the changes in the gross value of production because of un-appropriate changes in input cost. To overcome this problem, Kazi Committee had specifically recommended for conducting annual survey of selected large scale manufacturing establishments, which have now been started.

Indirect method is presently being used to project the year-to-year value added on the basis of Quantum Index of Manufacturing Industries (QIM). Estimates at constant factor cost are converted into current factor cost by applying a specific constructed Wholesale Price Index (WPI) (manufacturing) which covers items of Industrial Price Index (IPI) and their respective weights not covered in published WPI (Manufacturing). In the absence of any reliable data on depreciation, a flat rate of 10% of gross value added is applied to arrive at net value added.

**Benchmark Estimates:** The benchmark estimates for the year 1999-2000 are based on CMI 2000-01 as decided by the National Accounts Committee. The overall coverage is 46%. The data of CMI 2000-01 has been decomposed into two strata i.e. stratum-1 comprised of public limited companies listed / unlisted and stratum-2 others (individual ownership, partnership and private limited companies). The data of stratum-2 has been raised on the basis of ratio of employment reported in CMI 2000-01 to total employment of the frame of LSMI study 1999-2000 with adjustments for 2000-01. The data of stratum-1 public limited companies has not been raised but gaps have been filled-in from LSMI study 1999-2000.

The CMI value added estimates at producer's price have been deflated by the deflator and growth (9.46%) of 2000-01 to derive the benchmark estimates, Rs. 405467 million, of 1999-2000 and at basic prices the estimate is Rs. 337372 million. LPG (GVA=1230 million Rs.) is added to this sector as well.

### Small Scale Manufacturing

The first benchmark year 1959-60 for estimates of national accounts and prices in Pakistan was adopted in 1962. In 1985, the estimate of gross value added of small-scale manufacturing sub-sector was revised on the basis of SHMI Survey 1983-84. The growth rate was projected on the basis of annual compound growth rate between limited survey of Punjab 1976-77 and countrywide survey of 1983-84, which was estimated at 8.4%.

FBS conducted SHMI survey for the year 1987-88 and 1996-97. The annual compound growth rate between SHMI 1987-88 and 1996-97 was calculated at 5.31%, which was applied to obtain year-to-year value added at constant factor cost. These were converted into current factor cost estimates by applying a specially constructed WPI (manufacturing) covering the items produced by small industries.

Small and Household Manufacturing Industries survey, 1996-97 gave the figure for value addition of small-scale industries at Rs. 97773 million at current factor cost. The same constant factor cost figure was raised by the growth rate of 5.31 for the year 1997-98. The study conducted by Quaidian Economic Consultants Quaid-i-Azam University, Islamabad in 1999-2000 estimated the growth rates of 6.86% and 7.51% for the years 1998-99 and 1999-2000 respectively which were applied to estimate the benchmark figures for GVA of small scale industries at Rs. 132369 million. To compute the value addition for the subsequent years the fixed growth rate of 7.51 % has been recommended by the study until a new survey is undertaken to authenticate the growth rate. The details are tabulated below.

**GVA, 1999-2000 (at current FC) (Rs. Million)**

Year	1999-2000 Base	1980-81 Base
1996-97	97773	97773
1997-98	108424	108424
1998-99	117582	115877
1999-2000	<b>132369</b>	127779

**Slaughtering**

According to the latest accounting framework the slaughtering industry relates to manufacturing whereas the livestock is a part of agriculture sector. The products i.e., meat, hides, skins, bones, and blood etc. constitute slaughtering.

Quantities of beef, mutton and poultry meat have been taken from the published Agricultural Statistics of Pakistan. Net sale of animals in the livestock sub-sector is taken as input for slaughtering. Livestock division has provided number of animals, sold for slaughtering during the year 1999-2000. Output consists of meat and by-products like fats, hides/skins, bones, blood, edible offals etc. The prices of Marketing & Grading Department and survey have been taken. The value added in slaughtering industry has been derived by the product approach.

For the estimation of poultry meat, data in terms of quantity and prices of meat have been obtained from the Poultry Research Institute and livestock division. The prices are recorded by the Marketing & Grading Department, Karachi, in some major cities of Pakistan that have been used. According to the study on slaughtering, intermediate consumption for the year 1999-2000 stands at Rs 1295.2 millions. Estimated GVA is Rs. 51830 million. The sub-sector performance is tabulated below. Detail is attached as annexures 30 and 31.

**GVA Estimates, 1999-2000 (Rs. Million)**

Item	1999-2000 Base
Meat	140302
Other Products	63530
<b>Total Gross Output</b>	<b>203832</b>
Value of animals	150708
Other expenditures	1295
<b>Intermediate Consumption</b>	<b>152003</b>
<b>Gross Value Added</b>	<b>51830</b>

**Construction**

This sector covers land and construction of all type of buildings, roads, bridges, railway lines, utility lines (telecommunication lines, power lines, pipe lines), waterways, dams as well as repairs and maintenance of such infrastructure. The estimates of the sector have been developed on the basis of the expenditure, incurred by the establishments undertaking the construction or the

contractors or the sub-contractors and are also purchasing the material.

The data on expenditure on construction of these activities have been obtained from data set of GFCF of all sectors of economy. The data of population census 1998 regarding the number of houses in different categories have been used. The input structure, provided by the study on construction, has been applied.

Gross output has been estimated from the demand side, allowing for estimates of own account construction. The coefficients of the value added components have been used to derive the GVA of all activities of construction separately. The following uses of construction output are identified:

- ◆ Gross fixed capital formation originating from Construction includes:
  - Land improvement.
  - Construction of residential and non-residential buildings.
  - Other construction (roads, railways, utility lines, airports/runways, dams, pipelines, waterways etc).
- ◆ Intermediate use by industries: This relates to repairs and maintenance of non-residential buildings and other physical infrastructure.
- ◆ Household final consumption expenditure on repairs and maintenance of dwellings.

The total amount of intermediate consumption by branch is also calculated on the basis of findings of the study on construction. In the revised base series the katcha building in housing sector and segregation of roads by type have been added. Detail is annexed as annexure 32. Summary performance of the sector is tabulated below.

**GVA Estimates, 1999-2000 (Rs. Million)**

Head	1999-00	1980-81
	Base	Base
Expenditure on Construction	238185	193327
Intermediate Consumption	150799	97610
Gross Value Added	<b>87386</b>	95717

**Electricity, Gas and Water Supply**

This sector covers the whole range of electricity generation, transmission & distribution and gas transmission and distribution. Moreover, according to SNA-1993 classification, water works and supply is also covered in this gas sector. Following is the sub-classification and coverage of the sector:

- ◆ Electricity generation, transmission and distribution,
- ◆ Independent power plants (IPPs)

- ◆ Captive power plants (CPPs)
- ◆ Small hydel power units
- ◆ Gas transmission and distribution
- ◆ Compressed Natural gas (CNG)
- ◆ Water works & supply

Improvement has also been made in all the sub-sectors in terms of enhancement in the coverage, estimation methodology and availability of data.

**Electricity Sub-Sector:** Water & Power Development Authority (WAPDA) and the Karachi Electric Supply Corporation (KESC) are the biggest sources of energy generation and distribution. Pakistani as well as multi national companies also work as Independent Power Plants (IPPs) units under the licence issued by the Government of Pakistan. The IPP units generate electricity and sell the product to WAPDA and KESC, which distribute with their networks. The Small hydel dams/micro hydel projects are situated in NWFP. These units are covered for the first time in the national accounts estimates.

**Gas Sub-Sector:** The activities in the Gas Sub-sector are the transmission and distribution of the natural gas. For the existing estimation the data is collected from Sui Northern Gas (SNG), Sui Southern Gas (SSG) and BOC Gas Companies. Up till now these three companies were considered as the sole distributors of the natural Gas. Therefore, value addition was computed on the basis of these three companies only. Now Petroleum Gas (LPG) and Compressed Natural Gas (CNG) stations have also been established and operating throughout the country. LPG is

included in large scale manufacturing sector but CNG is included in this sub-sector.

**Water Supply:** For the purpose of GVA estimation, the sector has been divided into three sub-sectors.

- ◆ Irrigation Water (Canal and Tube well water)
- ◆ Domestic Water
- ◆ Commercial/ Industrial Water

The contribution to GVA, of Irrigation Water (Canal and Tube wells water) is estimated at Rs. 14023 million, of Domestic Water at Rs. 2863 million and of Commercial/ Industrial Water at Rs. 92 million.

**Estimation:** The GVA estimates have been compiled through product approach. Accordingly gross output/gross sale of energy plus other income have been taken as gross output on basic prices which means transport & trade margins and indirect taxes have been eliminated from the gross output. Intermediate consumption (purchaser prices) has been deducted from gross output to arrive at gross value added at basic prices. The putative formula has been used to compute gross value added, the difference of gross output and intermediate input at producer price.

The GVA estimates for 1999-2000 at current producer prices stand at Rs 140858 million for the years 1999-2000. These estimates have been compiled from the mail questionnaires and annual reports (Profit & Loss Accounts) applying production approach. Efforts have been made to remain in line with the recommendations of SNA-1993. The summary performance of the sub-sector is tabulated below.

**GVA Estimates, 1999-2000 (Rs Million)**

<b>Sub-Sector</b>	<b>1999-2000 Base</b>	<b>1980-81 Base</b>
Electricity Generation, Transmission & Distribution (WAPDA & KESC)	62531	54316
Independent Power Plants	40564	41821
Captive Power Plants (CPPs)	1302	1585
Small Hydel Power Units	29	-
Gas Transmission & distribution	17942	16342
Compressed Natural Gas	282	-
Water Supply	16978	-
<b>Total</b>	<b>139626</b>	<b>114064</b>

Compressed Natural gas (CNG) and water supply are new quantification in the benchmarks (1999-2000). Data for the benchmark have been taken from annual reports.